

IN THE CLAIMS:

Please cancel claims 1-33 without prejudice to future prosecution of the subject matter contained therein.

Please add new claims 34-66 as set forth below:

(New) 34. A non-thermal plasma reactor element comprising:
a first structural carrier for providing structural support;
a first electrode layer disposed upon said first structural carrier; and
a first thin high k barrier layer disposed upon said first electrode layer.

(New) 35. The non-thermal plasma reactor element of claim 34, further comprising:
a second structural carrier for providing structural support; and
a second electrode layer disposed upon said second structural carrier, said second electrode layer spaced from said first electrode layer.

(New) 36. The non-thermal plasma reactor element of claim 35, further comprising:
a second thin high k barrier layer disposed upon said second electrode layer.

(New) 37. The non-thermal plasma reactor element of claim 35, wherein said first structural carrier is a double dielectric barrier structural carrier having said electrode layer disposed on each side of opposite sides of said first structural carrier and wherein said first thin high k barrier layer is disposed over said first electrode layer on both sides of opposite sides of said first structural carrier.

(New) 38. The non-thermal plasma reactor element of claim 35, wherein said first structural carrier is a single dielectric barrier structural carrier having said first electrode layer disposed on each side of opposite sides of said first structural carrier and wherein said first thin high k barrier layer is disposed over the first electrode layer on only one side of opposite sides of said first structural carrier.

(New) 39. The non-thermal plasma reactor element of claim 37, wherein said second structural carrier is a double dielectric barrier structural carrier having said second electrode layer disposed on each side of opposite sides of said second structural carrier and wherein a second thin high k barrier layer is disposed over said second electrode layer on both sides of opposite sides of said first structural carrier.

(New) 40. The non-thermal plasma reactor element of claim 37, wherein said second structural carrier is a null dielectric barrier structural carrier having said second electrode layer disposed on each side of opposite sides of said second structural carrier.

(New) 41. The non-thermal plasma reactor element of claim 38, wherein said second structural carrier is a single dielectric barrier structural carrier having said second electrode layer disposed on each side of opposite sides of said second structural carrier and wherein said second thin high k barrier layer is disposed over the first electrode layer on only one side of opposite sides of said second structural carrier.

(New) 42. The non-thermal plasma reactor element of claim 38, wherein said second structural carrier is a null dielectric barrier structural carrier having said second electrode layer disposed on each side of opposite sides of said second structural carrier.

(New) 43. The non-thermal plasma reactor element of claim 39, wherein said first and second structural carriers are plates.

(New) 44. The non-thermal plasma reactor element of claim 39, wherein said first and second structural carriers are C-shaped structural carriers.

(New) 45. The non-thermal plasma reactor element of claim 39, wherein said first and second structural carriers are tine end connectors.

(New) 46. The non-thermal plasma reactor element of claim 41, wherein said first and second structural carriers are plates.

(New) 47. The non-thermal plasma reactor element of claim 42, wherein said first and second structural carriers are C-shaped structural carriers.

(New) 48. The non-thermal plasma reactor element of claim 40, wherein said first and second structural carriers are tine end connectors.

(New) 49. The non-thermal plasma reactor element of claim 34, wherein said first structural carrier is a swept shaped structural carrier.

(New) 50. The non-thermal plasma reactor element of claim 49, wherein said first electrode layer is disposed on each side of opposite sides of said swept shaped structural carrier and said first thin high k barrier layer is disposed over said first electrode layer.

(New) 51. The non-thermal plasma reactor element of claim 45, further comprising a plurality of tine plates, each tine plate having a bus connection path formed thereon.

(New) 52. The non-thermal plasma reactor element of claim 34, wherein said element comprises minimal structural ligaments.

(New) 53. The non-thermal plasma reactor element of claim 34, wherein said first electrode layer and first thin high k layer are tailored for a particular application.

(New) 54. The non-thermal plasma reactor element of claim 34, wherein said structural carrier is prepared from a dielectric material having properties sufficient to provide a suitable combination of low cost, fabricability, mechanical strength and thermal properties.

(New) 55. The non-thermal plasma reactor element of claim 54, wherein said structural carrier comprises cordierite, mullite, or alumina.

(New) 56. The non-thermal plasma reactor element of claim 34, wherein said first high k barrier layer comprises a high k material having less than about 5% porosity.

(New) 57. The non-thermal plasma reactor element of claim 34, wherein said first high k barrier comprises bismuth strontium titanate, bismuth titanate, bismuth niobium titanate, or barium strontium titanate.

(New) 58. The non-thermal plasma reactor element of claim 34, wherein said high k barrier layer is doped.

(New) 59. A method for preparing a non-thermal plasma reactor element, comprising:
 providing a first structural carrier for providing structural support;
 disposing a first electrode layer upon the first structural support; and
 disposing a thin high k barrier layer upon said electrode layer.

(New) 60. The method of claim 59, wherein the electrode layer and high k layer are tailored for a particular application.

(New) 61. The method of claim 59, further comprising:
 providing a second structural carrier for providing structural support; and
 disposing a second electrode layer disposed upon the second structural carrier,
 wherein the second electrode layer is spaced from the first electrode layer.

(New) 62. The method of claim 59, further comprising:
 disposing an intermediate bonding layer between the first structural carrier and the first electrode layer.